

WE CLAIM:

1. A method for forming a coating layer comprising:
assembling a die coater comprising a first die block, a second die block, and a
5 plurality of fasteners holding the first die block and the second die block together,
wherein:
 - (a) each of the plurality of fasteners provides a compression force between the
first die block and the second die block; and
 - (b) the first die block and the second die block are constructed to provide an
10 internal manifold and a coating slot;
adjusting the compression force on at least one of the plurality of fasteners to the
coating slot with a profile having a height uniformity within about 2%; and
extruding a coating material through the internal manifold and the coating slot.
- 15 2. A method according to claim 1, wherein the plurality of fasteners comprises a
forward row of fasteners and a rearward row of fasteners.
3. A method according to claim 2, wherein the die coater further comprises an offset
bracket for adjusting the compression force of at least one fastener from the forward row
20 of fasteners and at least one fastener from the rearward row of fasteners.
4. A method according to claim 1, wherein the coating slot has a height uniformity of
within about 1.5%.
- 25 5. A method according to claim 1, wherein the coating slot has a height uniformity of
within about 1%.
6. A method according to claim 1, wherein at least two of the plurality of fasteners
have a torque difference of greater than about 3%.
- 30 7. A method according to claim 1, further comprising:
measuring the height of the coating slot using a slot measuring gauge.

8. A method according to claim 1, wherein the die coater comprises an overhang of less than about 4.7 inches.

5 9. A method according to claim 1, wherein die coater further comprises an overhang and a first die block thickness wherein the cube of the ratio of die overhang to the first die block thickness is less than about 9.

10 10. A die coater comprising a first die block, a second die block, and a plurality of fasteners holding the first die block and the second die block together, wherein:

(a) each of the plurality of fasteners provides a compression force between the first die block and the second die block;

(b) the first die block and the second die block are constructed to provide an internal manifold and a coating slot; and

15 (c) wherein at least two of the plurality of fasteners have a torque differential of greater than about 3%.

11. A die coater according to claim 10, wherein the plurality of fasteners comprises a forward row of fasteners and a rearward row of fasteners.

20 12. A die coater according to claim 11, further comprising an offset bracket for adjusting the compression force between at least one fastener from the forward row of fasteners and at least one fastener from the rearward row of fasteners.

25 13. A die coater according to claim 10, wherein the coating slot has a height uniformity of within about 1.5%.

14. A die coater according to claim 10, wherein the coating slot has a height uniformity of within about 1%.

30 15. A die coater according to claim 10, wherein at least two of the plurality of fasteners have a torque difference of greater than about 5%.

16. A die coater according to claim 10, wherein the die coater has an overhang of less than about 4.7 inches.

17. A die coater according to claim 10, wherein the die coater further comprises an overhang and a first die block thickness wherein the cube of the ratio of overhang to thickness of the first die block is less than about 9.

18. A method for forming a coating layer comprising:
assembling a die coater comprising a first die block, a second die block, an offset bracket, and a plurality of fasteners holding the first die block, the second die block and the offset bracket together, wherein:

(a) each of the plurality of fasteners provide a compression force between the first die block and the second die block;

(b) the first die block and the second die block are constructed to provide an internal manifold and a coating slot; and

(c) at least two of the plurality of fasteners extend through the offset bracket for distributing the compression force between the first die block and the second die block differently than would be provided without the offset bracket; and

extruding a coating material through the internal manifold and the coating slot.

19. A method according to claim 18, wherein the offset bracket is constructed to engage at least two of the plurality of fasteners.

20. A method according to claim 18, wherein the coating slot has a height uniformity of less than about 2%.

21. A method according to claim 18, wherein the coating slot has a height uniformity of less than about 1%.

22. A method according to claim 18, wherein the offset bracket comprises an external offset bracket.

23. A method according to claim 18, wherein the offset bracket comprises an internal offset bracket.

5 24. A die coater comprising a first die block, a second die block, and a plurality of fasteners holding the first die block and the second die block together, and an offset bracket, wherein:

(a) each of the plurality of fasteners provides a compression force between the first die block and the second die block; and

10 (b) the first die block and the second die block are constructed to provide an internal manifold and a coating slot; and

(c) at least two of the plurality of fasteners extend through the offset bracket for distributing the compression force between the first die block and the second die block differently than would be provided without the offset bracket.

15 25. A die coater according to claim 24, wherein the offset bracket includes an offset arm, a forward leg, and a rearward leg, and wherein at least one of the plurality of fasteners extends through the offset arm and not through the forward leg and the rearward leg.

20 26. A die coater according to claim 24, wherein the coating slot has a height uniformity of within about 1.5%.

25 27. A die coater according to claim 24, wherein the coating slot has a height uniformity of within about 1%.

28. A die coater according to claim 24, wherein at least two of the plurality of fasteners have a torque difference of greater than about 3%.

30 29. A method for forming a coating layer comprising:

assembling a die coater comprising a first die block, a second die block, and a plurality of fasteners holding the first die block and the second die block together, wherein:

(a) each of the plurality of fasteners provides a compression force between the first die block and the second die block; and

(b) the first die block and the second die block are constructed to provide an internal manifold and a coating slot;

adjusting the location of at least one of the plurality of fasteners to provide the coating slot with a profile having a height uniformity within about 2%; and

extruding a coating material through the internal manifold of the coating slot.

30. A method for forming a coating layer comprising:

assembling a die coater comprising a first die block, a second die block, a shim, and a plurality of fasteners holding the first die block and the second die block together, wherein:

(a) each of the plurality of fasteners provides a compression force between the first die block and the second die block; and

(b) the first die block and the second die block are constructed to provide an internal manifold and a coating slot;

selecting the shim to have a non-uniform thickness to provide the coating slot with a profile having a height uniformity within about 2%; and
extruding a coating material through the internal manifold and the coating slot.

31. A die coater comprising a first die block, a second die block, and a plurality of fasteners holding the first die block and the second die block together, wherein:

(a) each of the plurality of fasteners provides a compression force between the first die block and the second die block;

(b) the first die block and the second die block are constructed to provide an internal manifold and a coating slot;

(c) the die coater comprising an overhang of less than about 4.7 inches;

(d) the die coater comprising a cube of the ratio of overhang to thickness of the first die block of less than about 9.

32. A die coater according to claim 31, wherein the die coater comprises a cube of the ratio of the overhang/thickness ratio to the modulus of less than about $3.0 \times 10^{-7} \text{ in}^2/\text{lb}$.

5 33. A method for forming a coating layer having a substantially uniform thickness comprising:

assembling a die coater comprising a first die block, a second die block, and a plurality of fasteners holding the first die block and the second die block together, wherein:

10 (i) each of the plurality of fasteners provides a compression force between the first die block and the second die block; and

(ii) the first die block and the second die block are constructed to provide an internal manifold and a coating slot;

adjusting the die coater to provide the coating slot with a non-uniform profile; and

15 extruding a coating material through the internal manifold and the coating slot to provide a substantially uniform coating.